

ABSTRACT OF THE DISCLOSURE

Optical sensing systems and methods for detecting target characteristics are disclosed. An optical sensing system can detect target motion within a known environment. A laser source, such as a vertical cavity surface emitting laser, has at least two laser signal emission apertures. At least one detector is operationally responsive to laser signals. A motion analysis module cooperates with a microprocessor to determine motion characteristics of an object detected within said environment. A laser source emits at least two laser signals into an environment occupied by a target, said at least one detector detects changes in said at least two laser signals after said signals pass through said environment and interfere with a detected object, and said microprocessor determines target characteristics based on said signals received by said detector and input from said motion analysis module. At least one detector, which is operationally responsive to the laser source. The system can also include a microprocessor that is operationally coupled to the detector(s) for processing signal data, a memory accessible by the microprocessor for storing target characteristics (e.g., unique signals), and a software module accessible by the microprocessor for enabling system training and detection operations.

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